

LISTING OF THE CLAIMS:

1. (Previously Amended) A cement kiln chlorine/sulfur bypass system for use with a cement kiln which produces a kiln exhaust including exhaust gas and exhaust dust, the system comprising:

an air bleed means for bleeding a kiln exhaust gas passage, which runs from an end of a cement kiln to a bottom cyclone, of a part of a combustion gas including calcium oxide (CaO) and sulfur dioxide (SO₂), the air bleed means receiving the kiln exhaust from the cement kiln;

a separating means for separating dust in the gas bled by the air bleed means into coarse particles and fine particles; and

a wet dust collector receiving the fine particles and exhaust gas from the separating means, the wet dust collector being configured to separate the fine particles from the gas, and simultaneously removing sulfur included in the bled gas by allowing the sulfur dioxide (SO₂) in the combustion gas to react with calcium hydroxide (Ca(OH)₂), which is generated when the calcium oxide (CaO) in the fine particles of the dust of the bled gas reacts with water, to generate gypsum.

2. (Original) The cement kiln chlorine/sulfur bypass system as claimed in claim 1, wherein said separating means includes a classifier in which cut size is changeable.

3. (Original) The cement kiln chlorine/sulfur bypass system as claimed in claim 1, wherein said separating means includes a cyclone in which inlet gas velocity is changeable.

4. (Original) The cement kiln chlorine/sulfur bypass system as claimed in claim 1, wherein said wet dust collector is a mixing scrubber.

5. (Original) The cement kiln chlorine/sulfur bypass system as claimed in claim 4, wherein said mixing scrubber comprises a circulating liquid tank to which a dust slurry collected by the mixing scrubber is supplied and a circulating system by which a part of the dust slurry in the circulating liquid tank is returned to the mixing scrubber.

6. (Original) The cement kiln chlorine/sulfur bypass system as claimed in claim 5, further comprising a sulfuric acid supplier for supplying sulfuric acid to the circulating liquid tank.

7. (Previously Amended) A method of treating a combustion gas exhausted from a cement kiln, the combustion gas including a dust, the method comprising:

bleeding a kiln exhaust gas passage, which runs from an end of a cement kiln to a bottom cyclone, of a part of the combustion gas including calcium oxide (CaO) and sulfur dioxide (SO₂);

separating coarse particles in dust in the bled gas; and

collecting dust from the gas containing fine particles by a wet dust collector with a solvent, and simultaneously removing sulfur included in the bled gas by allowing the sulfur dioxide (SO₂) in the combustion gas to react with calcium hydroxide (Ca(OH)₂), which is generated when the calcium oxide (CaO) in the fine particles of the dust of the bled gas reacts with water, to generate gypsum.

8. (Original) The method of treating combustion gas exhausted from a cement kiln as claimed in claim 7, wherein at least a part of said dust slurry collected by the wet dust collector is added to a cement mill system.

9. (Original) The method of treating combustion gas exhausted from a cement kiln as claimed in claim 7, wherein said dust slurry collected by the wet dust collector is separated into solid and liquid and a desalted dust cake is added to a cement mill system.

10. (Original) The method of treating combustion gas exhausted from a cement kiln as claimed in claim 7, wherein said dust slurry collected by the wet dust collector is separated into solid and liquid, and at least a part of separated brine is added to a cement mill system.

11. (Original) The method of treating combustion gas exhausted from a cement kiln as claimed in claim 7, wherein said dust slurry collected by the wet dust collector is separated into solid and liquid; separated brine is desalted in salt recovery process to recover industry salt; and treated water after desalting is utilized again as washing water for washing after the solid/liquid separation or/and water for collection at the wet dust collector.

12. (Previously Amended) A cement kiln chlorine/sulfur bypass system for use with a cement kiln which produces a kiln exhaust including exhaust gas and exhaust particles, each particle defining a particle size, the system comprising:

an air bleed means for bleeding a kiln exhaust gas passage, which runs from an end of a cement kiln to a bottom cyclone, of a part of a combustion gas including

calcium oxide (CaO) and sulfur dioxide (SO₂), the air bleed means receiving the kiln exhaust from the cement kiln;

a circulating liquid tank having a fluid stored therein, the fluid defining a fluid pH;

an adjustable separating means in fluid communication with the circulating liquid tank and the air bleed means, the separating means being configured to receive the kiln exhaust and to define a cut point which is adjustable to control the fluid pH, wherein the fluid pH decreases as the cut point increases and the fluid pH increases as the cut point decreases; and

a wet dust collector in fluid communication with the adjustable separating means and the circulating liquid tank, the wet dust collector receiving the fine particles and exhaust gas from the separating means, the wet dust collector being configured to separate the fine particles from the gas, and simultaneously removing sulfur included in the bled gas by allowing the sulfur dioxide (SO₂) in the combustion gas to react with calcium hydroxide (Ca(OH)₂), which is generated when the calcium oxide (CaO) in the fine particles of the dust of the bled gas reacts with water, to generate gypsum.